

## VARIATION IN EGG COLOR IN *AGATHYMUS ESTELLEAE* (LEPIDOPTERA: MEGATHYMIDAE)<sup>1</sup>

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**ABSTRACT:** A fertile female of *Agathymus estelleae* lays eggs, some of which are green and others are various shades of beige. No other species of Megathymidae is known to do this. Concealment is enhanced when green eggs lodge in the plant or beige eggs falls to the ground.

For a number of years we have been aware that *Agathymus estelleae* (Stallings & Turner) produced eggs of different colors. At present we know of no other species of Megathymidae that do this, although we suspect that *A. remingtoni* (Stallings & Turner) and *A. valverdiensis* Freeman may, because both are closely related to *A. estelleae* and no doubt evolved from a common ancestor.

In prior years when we confined gravid females of *A. estelleae* we found that about half of the eggs were green while the others were various shades of beige, some nearly "pinkish."

On 14 September, 1984 in the area of Saltillo, Mexico, we captured a female of *A. estelleae* that had just been fertilized. We placed her in a wire cage and during the remainder of the day she laid 43 beige eggs. Subsequent egg production was: September 15, 25 beige eggs, 1 olive green; September 16, 15 beige eggs; September 17, 15 beige eggs; September 18, 7 beige and 9 green eggs; September 19, 9 green eggs; September 20, died with 9 green eggs in her body.

All of the eggs laid were fertile, hatching on 1, 2 & 3 October, 1984. We do not know whether a female mates more than once, but it is evident from what we observed that a single mating can be sufficient to fertilize all of her eggs.

The food plant of *A. estelleae* is *Agave lechuguilla* Torr. which has narrow leaves. The female alights on a leaf of the plant near the tip and drops eggs one at a time (usually) without affixing them to the plant. The eggs may lodge at the base of the plant among the leaves or they may bounce out of the plant and fall to the ground. Observations confirm that green eggs were concealed better when lodged in the plant while beige eggs had the cryptic advantage when they fell to the ground. It is assumed that these colors might also impart some protective advantage against predators and parasitoids. This could also represent a color polymorphism that is more or

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less balanced.

In this paper we have not tried to speculate as to the cause of the colors of the eggs herein reported. Dr. John C. Downey suggests that a possible explanation for the cause of this color variation is:

“Possible maternal and/or embryonic contributions to the egg colors observed are unknown. However, we cannot discount the fact that thin egg coatings from secretions of the accessory glands may produce the darker (beige) hue to the egg. Ordinarily these collateral glands produce the sticky adhesive cement in species where eggs are attached to the foliage. Lesser amounts of the fluid, or its lack of production in the later part of the cycle, could result in the visibility of the basic green color. Such an explanation would account for the increased number of green eggs produced towards the end of the reproductive cycle in the example herein given.”

This idea, coupled with the fact that all known Megathymidae glue their eggs to the food-plant except the genus *Agathymus*, suggests a number of interesting studies of the evolution of the Megathymidae.

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### BOOKS RECEIVED AND BRIEFLY NOTED

A CATALOGUE OF THE CHIRONOMID GENERA AND SUBGENERA OF THE WORLD INCLUDING SYNONYMS (DIPTERA: CHIRONOMIDAE). Ashe, P. 1983. Ent. Scand. Suppl. 17, 68 pp. \$17.00.

This is an invaluable paper giving the current status of all the genera and subgenera of the world chironomid fauna. All synonyms and type-species are given along with very clear discussions of the various nomenclatorial problems involved in many of the names. It is particularly valuable when used in conjunction with Ent. Scand. Suppl. 19.

CHIRONOMIDAE OF THE HOLARCTIC REGION. KEYS AND DIAGNOSES. PART I. LARVAE. Wiederholm, T. (Ed.) 1983. Ent. Scand. Suppl. 19, 457 pp. \$73.00.

This is a long needed work giving keys and diagnoses of the larvae of all the Holarctic genera of Chironomidae. The sections are written by specialists from Europe and North America. The generic diagnoses including ecology and distribution are arranged in a uniform format and there is at least one plate of figures for each genus described. The figures on the plates are arranged in a uniform format, facilitating comparisons. Though some of the keys are difficult, the excellent diagnoses and figures make it possible for the non-specialist to place his material to genus. In some cases, where it was felt to be necessary, keys to subgenera and species groups are also provided.

SCANDINAVIAN SPECIES OF THE GENUS *PSITHYRUS* LEPELETIER (HYMENOPTERA: APIDAE). Loken, A. 1984. Ent. Scand. Suppl. 23, 45 pp. \$10.00.

In addition to descriptions of the Scandinavian species of *Psithyrus* this paper includes a key to the Holarctic genera of Bombinae and keys to the females and males of the European species of *Psithyrus*. The species of *Psithyrus* are obligate social parasites on *Bombus* and distributional maps of each Scandinavian species and its host are given.